

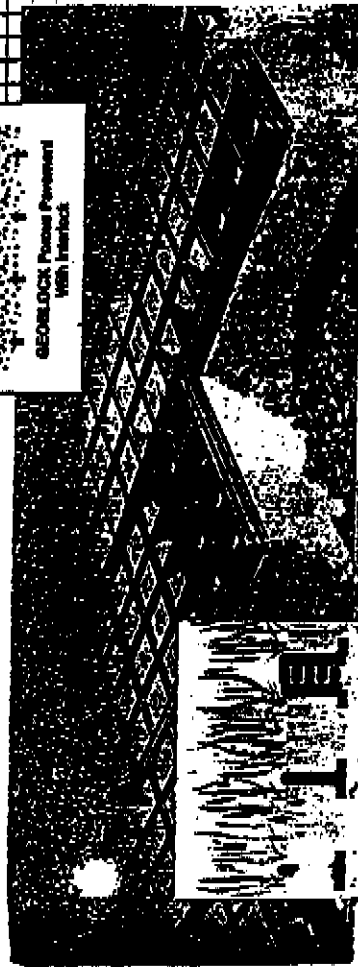
C3932-PRE
Poly Uno 344

GEOBLOCK
PRECIPITATION SYSTEM

Effect of Interlock
Soil Stress Distribution



SUPPORTS HEAVY TRAFFIC AND CONCENTRATED LOADS
Geoblock porous pavement reduces the amount of site preparation and subgrade improvement required. Its tongue-and-groove interlock forms a flexible structural bridge which spreads concentrated loads. The Geoblock system design flexes under loads that would break concrete. It assumes maximum load transfer from block to block thereby minimizing rutting potential.



PROTECTS THE CROWN OF THE GRASS AND PREVENTS SOIL COMPACTION

Geoblock porous pavement directly supports the weight of pedestrian and vehicular traffic on its cell walls, protecting the crown of the grass and preventing over compaction and degradation of the topsoil. Geoblock porous pavement provides further support for healthy grass growth by permitting the use of a soil-and-sand or soil-and-gravel mixture for the subbase. The Geoblock system provides total design flexibility, since it allows a load bearing pavement to be located in areas where drainage and the natural flexibility of grass are desired.

REDUCES STORMWATER RUN-OFF AND ENHANCES GROUNDWATER RECHARGE

Geoblock porous pavement surface geometry reduces run-off, increases infiltration, resists erosion, and enhances groundwater recharge. Geoblock porous pavement presents a 100% open area to the surface. Design allows water to percolate into the ground through drain holes in the bottom of the blocks.

The GEOBLOCK system paves the way for better access lanes

Designed to handle your most demanding turf and load support needs, the Geoblock porous pavement system is a series of interlocking, high-strength blocks made from a minimum of 80% post-consumer recycled plastic.

The Geoblock system supports heavy or concentrated loads by creating a flexible structural bridge over a prepared subbase. As a result, you can use standard flexible pavement design procedures with it, just like you would with asphalt.

Installation is simplified because the Geoblock system requires less site preparation, less subgrade improvement, less excavation and less granular backfill than other porous pavement systems.

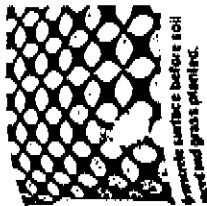
The Geoblock system installs easily around obstructions and corners and can be cut with ordinary hand tools or power tools. No trowels, cranes or concrete saws are required.

Manufactured with reinforced plastics, the Geoblock units offer excellent resistance to chemicals, fertilizers, temperature extremes and freeze-thaw cycles. The Geoblock system is suitable for a wide range of turf protection and load bearing applications, including:

- emergency and utility access lanes
- auxiliary parking areas
- golf cart path shoulders and aprons
- driveways, driveway shoulders and medians
- highway medians, crossovers, waysides and shoulders
- pedestrian walkways and wheelchair access ways
- sidewalks and approaches to athletic fields
- approaches to monuments, statues

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Grasscrete

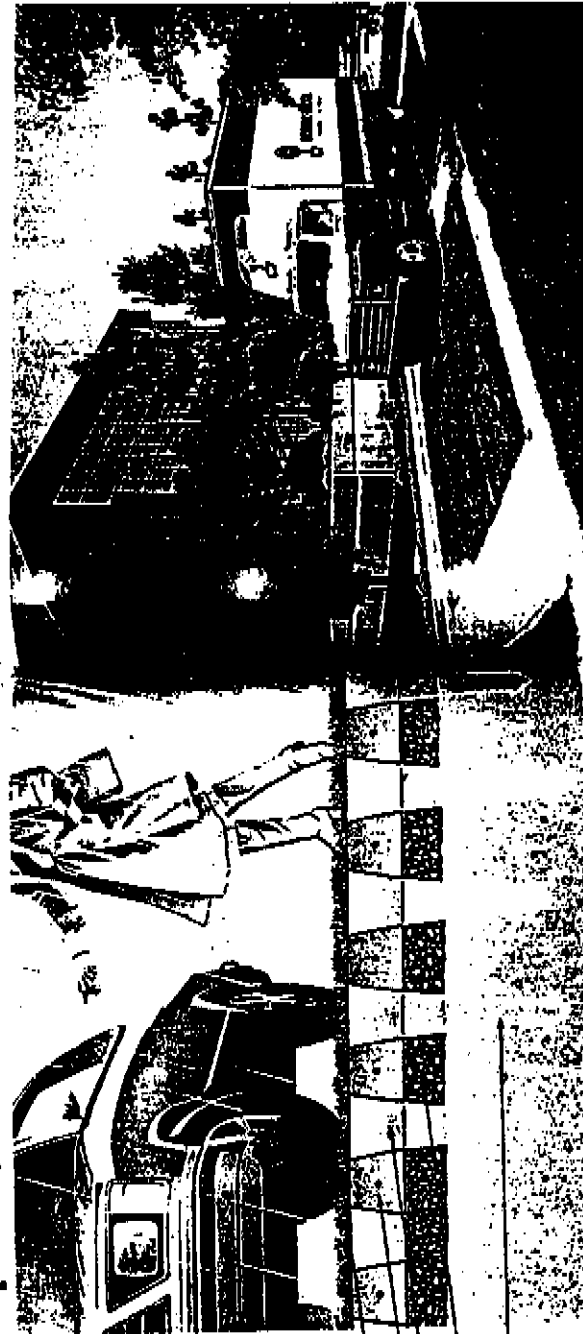


CONTROLS EROSION

REDUCES STORMWATER RUN

MEETS GREENSPACE ZONING REQUIREMENTS

Cast-in-place, Monolithic, Continuous Reinforced Grass/Concrete Porous Pavement



Grasscrete offers a significant improvement over original Grasscrete. It is a new Grasscrete, resulting in a lower cost (instead of 50% more) are used to a new Grasscrete, resulting in a lower cost reduction and appearance. Grasscrete competitively priced with porous paver products. It is long used for emergency access and parking. It is increasingly for application in erosion control, including stormwater runoff and landscape zoning.

Grasscrete is a cast-in-place, monolithic, continuously reinforced grass/concrete porous pavement system. It can be used anywhere an impervious paving method is used, e.g. driveways, parking lots, access routes, embankments, drainage ditches, storage areas for heavy materials and vehicles etc.

Because of its structural integrity and continuous reinforcing, Grasscrete is not subject to differential settlement, which can occur with precast products.

Precast porous pavers are susceptible to differential settlement resulting in an uneven surface.

Grasscrete monolithic porous pavement stays flat under the heaviest traffic even when the sub-base is saturated with water.



Grasscrete is a superb solution to problems created by the alteration of natural stormwater runoff patterns. By reducing runoff, Grasscrete actually recharges ground water recharge through infiltration, while improving the quality of the water supply and preventing erosion due to storms and floods. This "rain-point source" pollution is the subject of an increasing number of state and local statutes. As the result of impervious surfaces in dense urban development, many state and local authorities are no longer allowing developers to increase the amount of runoff to sewer systems.

In water management applications including erosion control, Grasscrete is a viable, cost-effective solution. At Ruby Creek in San Jose, California, Grasscrete is much more attractive for local residents than a plain concrete storm channel. Grasscrete allows infiltration while releasing hydrostatic pressure and doesn't require the subdrainage system necessary with solid concrete.

TEST REPORTS AVAILABLE

1. at least 60,000 lb. Guernsey Free Truck-Ladder conducted 100 ft. at 80 degrees with 100 lbs. in back and 100 lbs. in front. Saw was fully saturated. Expedient load test readings: 250, 700 lb. (Maximum load test: 1000 lb. at 100 ft.)
2. Permanently Test. Different soils and rainfall amount (load up to about 2 inches per hour). The test was through Grasscrete when rainfall was continued longer with the same result.

Grasspave² Installs in Five Easy Steps

Grasspave² product can be installed in most applications at approximately 1000 (12:100 m²) per hour, using these five installation steps.

Prepare porous base

Excavate depth of base course as determined by Engineer, place and compact sandy gravel base course material. To ensure the base is porous, run a hose and check that the water flows into the base and drains away. Add subsurface drainage as necessary to low spots.

Apply digrow mix

Apply digrow fertilizer and soil polymer mix over the base by hand or use a small fertilizer spreader set at 5 lbs. per 1000 (12:12 kg per 100 m²) for seed, double for a seeded base. After raking lightly to distribute the mix vertically, re-compact the base. **DO NOT PUT TOPSOIL BETWEEN SANDY GRAVEL BASE AND GRASSPAVE² UNITS!**

Lay Grasspave² units

Place Grasspave² units—with rings up—directly over the sandy gravel base. Use peels and rings provided to interlock units. Units can be shaped easily with a grading shovel or knife.

Seed or Sod Grasspave² units

- For seeding—fill to top of rings with clean sharp sand, then seed and mulch (hydro-mulch material is best).
- For thin sod—fill rings with clean sharp sand, then lay thin (1/2 inch) sod over area.

Irrigate, fertilize, and maintain

After installation, protect the grass from traffic until its root system is well-established. Then, simply maintain the grass paving as you would a grass lawn.

A Growing List of Grasspave² Applications

As demands for more visually appealing and cost-effectively sound physical surroundings grow, so do the uses for the Grasspave² porous paving system.

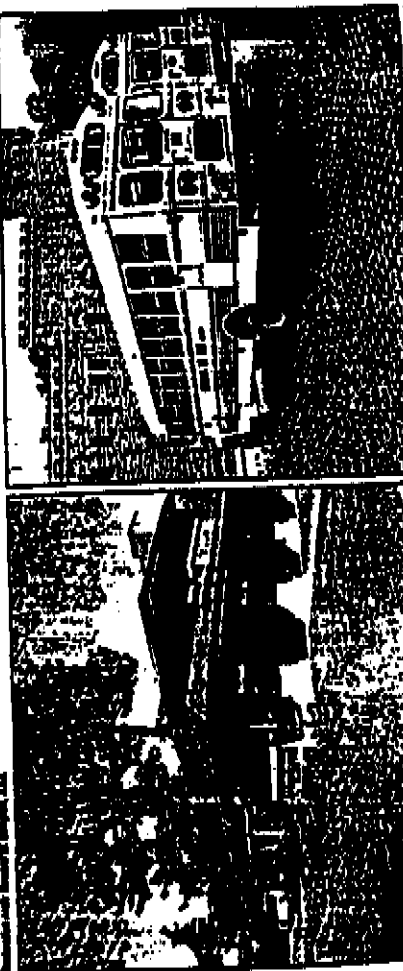
- These are some of the most common Grasspave² applications today:
- Vehicle Parking
 - Church parking
 - Employer parking
 - Overflow and event parking
 - Guest parking
 - Golf Courses
 - Player parking
 - Golf cart paths
 - Golf cart parking
 - Utility access/service drives
 - Pedestrian pathways/trails
 - Animal traffic pathways
 - Residential driveways
 - Street parking/service drives
 - Highway shoulders
 - Emergency turnarounds
 - Shovel/hoist stabilization
 - Fire lanes
 - Cooch, Apt. buildings
 - Office buildings
 - Hospitals
 - Schools

CHECKER BLOCK®

Hastings CHECKER BLOCK gives you the strength of concrete in areas where you wish to maintain a grassy look including overflow parking, service roads, tree pits, and fire lanes. It is also ideal for stabilizing embankments along streams, rivers, and lakes.

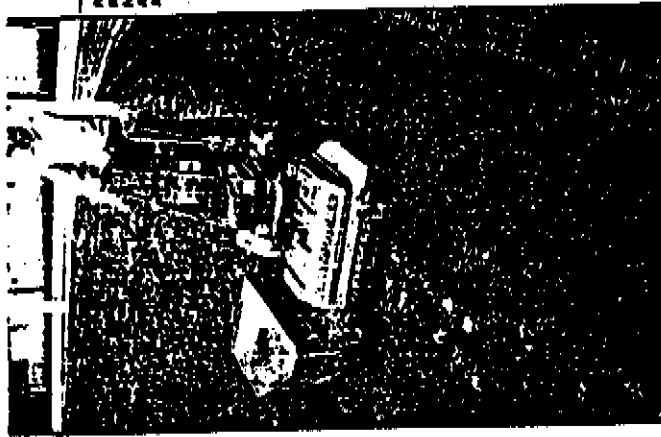
CHECKER BLOCK offers a ready solution when used as a tree grating. It provides high stability while offering maximum water penetration.

CHECKER BLOCK consists of steel-reinforced, waffle-like configurations which create voids for grass or crushed stone. It features a greater ratio of grass to concrete than any similar material thereby improving aesthetic and environmental qualities.



Left: Large area installed in parking lot, showing the ease of installation. Right: Small area installed in parking lot, showing the ease of installation.

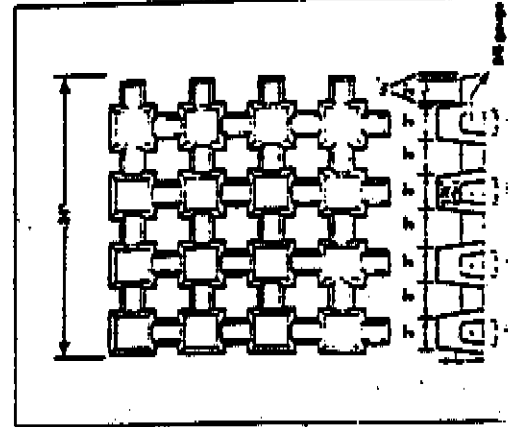
Right: Small area installed in parking lot, showing the ease of installation.



Right: Small area installed in parking lot, showing the ease of installation.

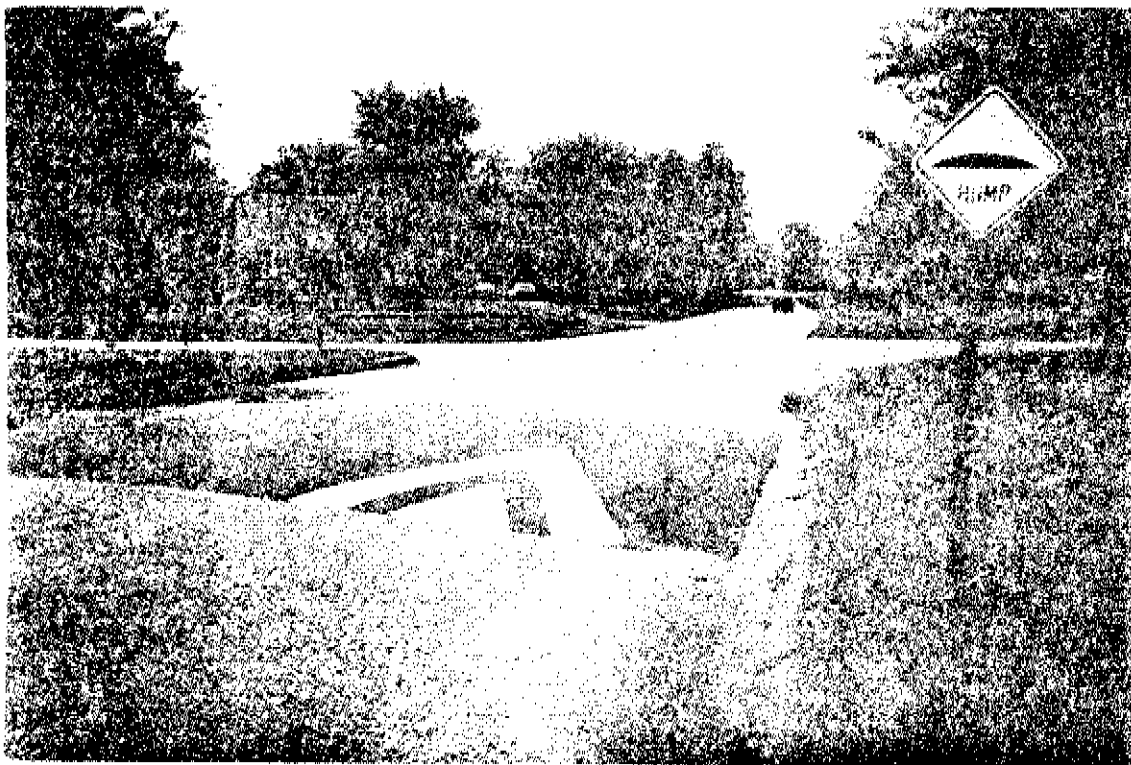
CHECKER BLOCK is manufactured in Southern California and Eastern Pennsylvania in order to facilitate shipments throughout the United States.

CHECKER BLOCK also enhances surface drainage eliminating costly underground systems. Grass can easily be cut by standard lawn mowers.





Speedtables, Valley Mede, Howard County



Signage

APPENDIX J

**Sudbrook Park's Olmsted Heritage:
Guidelines for Landscaping Public Spaces**

Although the community has not located Olmsted's specific planting plans for Sudbrook Park, it can obtain guidance in preserving and replenishing its Olmsted-designed landscape from Olmsted's letters to the Sudbrook Company, his writings and principles generally, and the landscaping description written by Edward Straka for Riverside, Illinois (Olmsted's first suburban village). The National Association for Olmsted Parks' Workbook Series, Vol. 3, "Defining an Ethic for Designed Landscapes" by Charles A. Birnbaum, ASLA, also provides relevant information. All of these sources were used in preparing these guidelines.

The land that became Sudbrook Park contained both wooded and open land. Olmsted wrote that the Sudbrook Company was to plant trees along the ten-foot planting spaces that bordered the roadways in the open areas (such as Cliveden Road); these trees were to be fifty feet apart and across from each other to provide a continuous umbrella of shade when mature. The graveled walk paths (either five or six-foot wide) were situated next to the planting strips in the open land, so they too would be shaded by the trees. In the wooded areas (along Windsor Road, for example), the order was reversed: the walk path was to be situated adjacent to the turf gutter with the planting strip beyond that. Trees were to be planted behind the path to supplement and appear a part of the existing forested area. Olmsted's cross sections for Sudbrook's roadways contain instructions on the contouring of the roads (which were sunk below grade to minimize their impact on the landscape), the planting strips and tree planting instructions, the walk paths and the formation of turf curbs and gutters.

Portions of Sudbrook Park were heavily wooded with oaks, hickory and chestnut trees in 1889. Most of the hickory and chestnut trees have been lost. Oaks still predominate on Windsor and Adana Roads. Norway maples predominate along Cliveden Road. But Sudbrook lost a large number of its majestic oaks and other mature trees during construction of the rapid transit through the community. The first summer after construction, Sudbrook again lost up to 80% of the new plantings because of a severe drought and theft. Moreover, many of Sudbrook Park's trees are old and have been lost through age or storms; routine replenishment must be continued to preserve the ambience of the community (Sudbrook began this effort with its earlier participation in the Tremendous Maryland program). It takes forty or more years for an oak to reach a substantial size. Unless replenishment is increased and maintained on an annual basis, the setting so valued by residents may be lost.

Olmsted understood the power of naturalistic scenery and went to great lengths to create an overall landscape design that would provide a tranquil respite from the "cramped, confusing and controlled" conditions of the city. In his report on Riverside, he specified that each homeowner should be required to plant at least two trees between the house and road. He wanted no individual plant or single species to detract from the totality of his design; thus, he did not use or permit flowers or flower gardening plants to be used in his public spaces (gardens, if desired, were to be reserved for private rear and side yards). In an effort to beautify several of our public triangles, and before information about Olmsted's landscaping principles was known, individual residents planted flowering plants on several of the triangles; these should be removed to private yards as part of the comprehensive re-landscaping of Sudbrook Park's public spaces.

Olmsted's intent for Sudbrook was to create a rural, country-like setting. His curvilinear roads, slightly depressed below grade, blended unobtrusively into the adjacent landscape rather than detracting from it. Native plants were used whenever possible; the species had to be conducive to the natural scene. As noted by Straka in the Riverside guidelines:

Natural variation was established with unequal size and spacing of plant species, by varying sizes of green masses or groupings, and by contrasting open spaces with areas of plantings. Plants of different age and maturity were used to recreate natural progression and reforestation. Plant groups were formed by the use of multiples of like species and multiples of similar compatible species. The subtle variation in color tint and leaf texture enriched the grouping and accentuated the mass.

Varying heights of plants were used to create a layering effect to the landscape. Trees were intermixed with understory plantings to gently diminish the planting groups from their highest point down to the ground. Understory plantings were used to fill in or intensify the masses, to screen where desired, to form wind breaks, to create variety, and to show the rich quality of nature.

The overall quality of the landscape was the lush colors of "green" plantings supplemented by the cool "blue" of the sky . . . ; a landscape that was a variety of tints and textures of green foliage against a blue background.

Other points noted by Straka were that planting borders were to have curving, not straight, edges; trimming should be done only where absolutely necessary; the composition should be a unified and harmonious variety of landscape experiences; and exotic, spectacular, vivid colored or foreign items would disturb the impact of the landscape and were not to be used.

Site investigation and analysis, and plan development, are necessary prerequisites to appropriate site reconstruction. Thus, before beginning to re-landscape, certain preliminary steps are necessary.

Preliminary Steps:

1. Prepare an historic record documentation of plant materials in Sudbrook Park's public spaces, including all triangles, along the streetscape and in the Sudbrook Stream Valley Park. Recent research on Sudbrook's history and Olmsted design yielded some, but not extensive, information about pre-existing and selected plant materials used in early Sudbrook Park. This should be compiled for future reference. Any additionally discovered research should be added when found.
2. Survey and document existing trees and plant materials.
3. Determine appropriate preservation treatment in consultation with Olmsted scholars and landscape architects.
4. Create a preservation planting plan and plant list; every effort should be made to match the scale, form, and texture of the plant materials depicted in historic photographs or records that are representative of Olmsted's plan.

5. Site and install the selected plant materials; refer to Olmsted's directions for tree planting for Sudbrook. Replace with good topsoil any soil that is inferior.

The following guidelines are proposed to preserve, restore and enhance the Sudbrook Park landscape. When finalized and adopted, they are intended to be mandatory for Sudbrook's triangles and the Sudbrook Stream Valley Park, and recommended for residents with respect to their individual properties:

Landscaping Guidelines:¹

1. Plant groups should contain an assemblage of hardwood trees and understory plantings which are:

a. Informal and naturalistic in appearance -- as if the grouping "just happened" and was not a conscious positioning of plants.

b. Asymmetrical in total form.

2. Individual plants should be subordinated to the whole group and not draw attention to themselves.

3. Generally, a multiple number of like species should be used within groups rather than using a single plant of a species. Group plantings that are a display of dissimilar single species are not part of the natural landscape.

4. Plants within a group should vary in size and height. This can be attained by using varying maturity plants of the same species, or by using compatible different species that by their natural growth habit form differing heights and widths, creating a stepped down effect. (Shrubs planted under and amongst low growing trees, and low growing trees under tall trees form this layering effect).

5. The edge of plant groups should be curved and/or serpentine rather than follow a straight line.

6. Plant groups should vary in size within the total landscape.

7. The ground of open, meadow-like areas and tree groves should be planted with grass.

8. The ground under groups of low branching trees or low shrubbery should be covered with ground cover.

9. Distracting items should not interfere with the total scene. Unusual, exotic or uniquely formed plants, flower beds and extremely unlike plants used in a group disrupt the tranquil and subtle, but powerful, concept intended by Olmsted.

¹These guidelines for Sudbrook are taken primarily from the guidelines prepared for Riverside by Edward Straka, which he generously shared with Sudbrook Park. Our thanks to him for the extensive work he did and for letting us adapt his guidelines to the Sudbrook landscape.

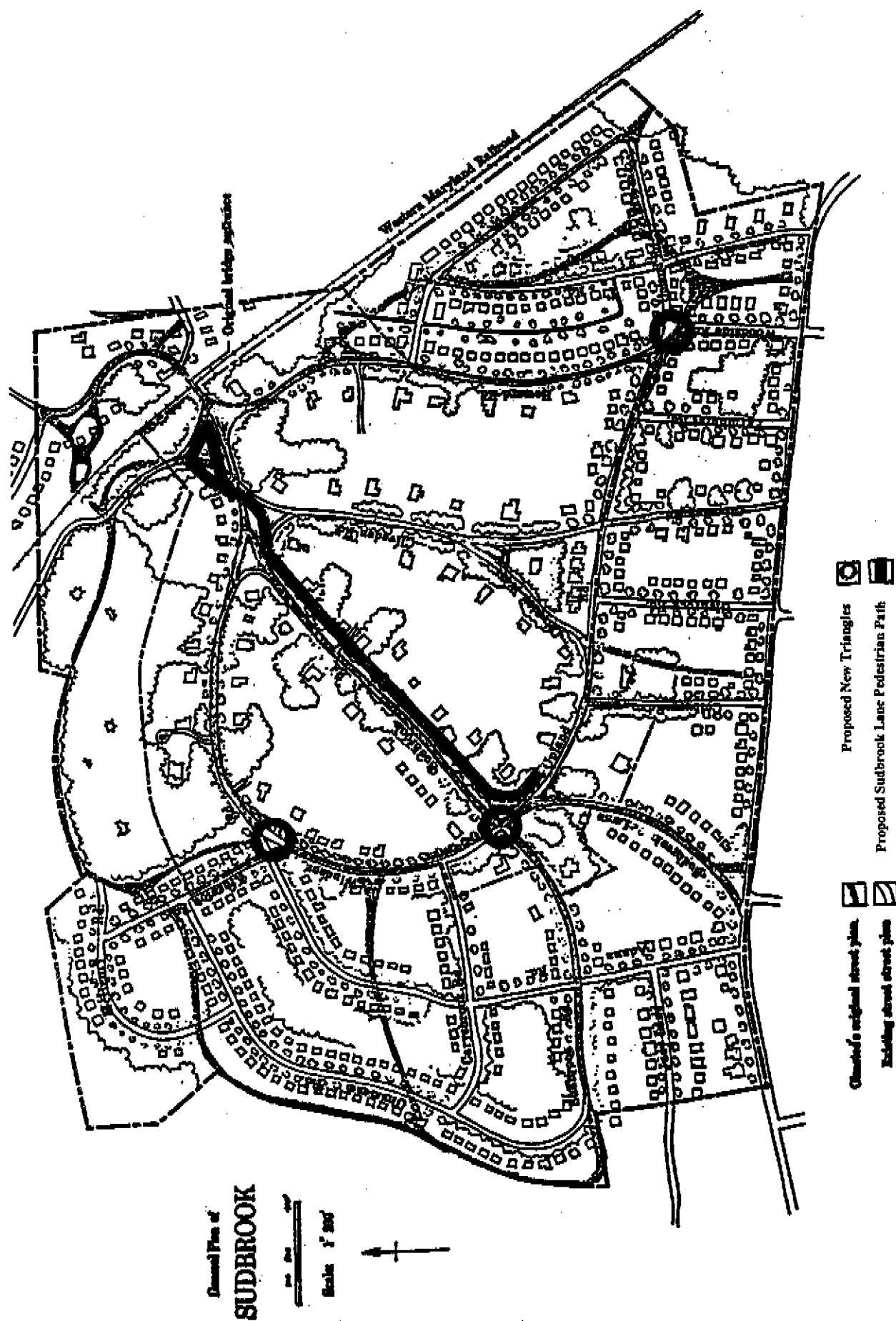
10. The overall color of the landscape should be the green of the plantings against the blue background of the sky. Red and yellow are not to be prevalent in the summer landscape.

11. The materials, construction, and forms of all paths, benches, playground equipment, drinking fountains, stone property markers, lighting, historic markers, access roads, and other landscape elements should be governed by a naturalistic concept, being harmonious with and inconspicuous in the total landscape scene.

12. Formal planting is not a part of Sudbrook's public landscape concept, and the following formalistic characteristics should be avoided:

- a. Sculptured or exotic plants.
- b. Vividly colored plants and flowers.
- c. In line planting (species in a straight line).
- d. Geometric plant arrangements.
- e. Symmetrical grouping of plants.
- f. Equal height and size plants.
- g. Display planting (such as flower beds or gardens).
- h. Many dissimilar types of plants in a group, or the use of many single species within a group.
- i. Any plant or item that is so individualistic that it draws attention to itself.
- j. Plants marginally adaptive to the Sudbrook Park area.
- k. Use of stone or wood chip beds.
- l. Use of edge stripping material to border areas.

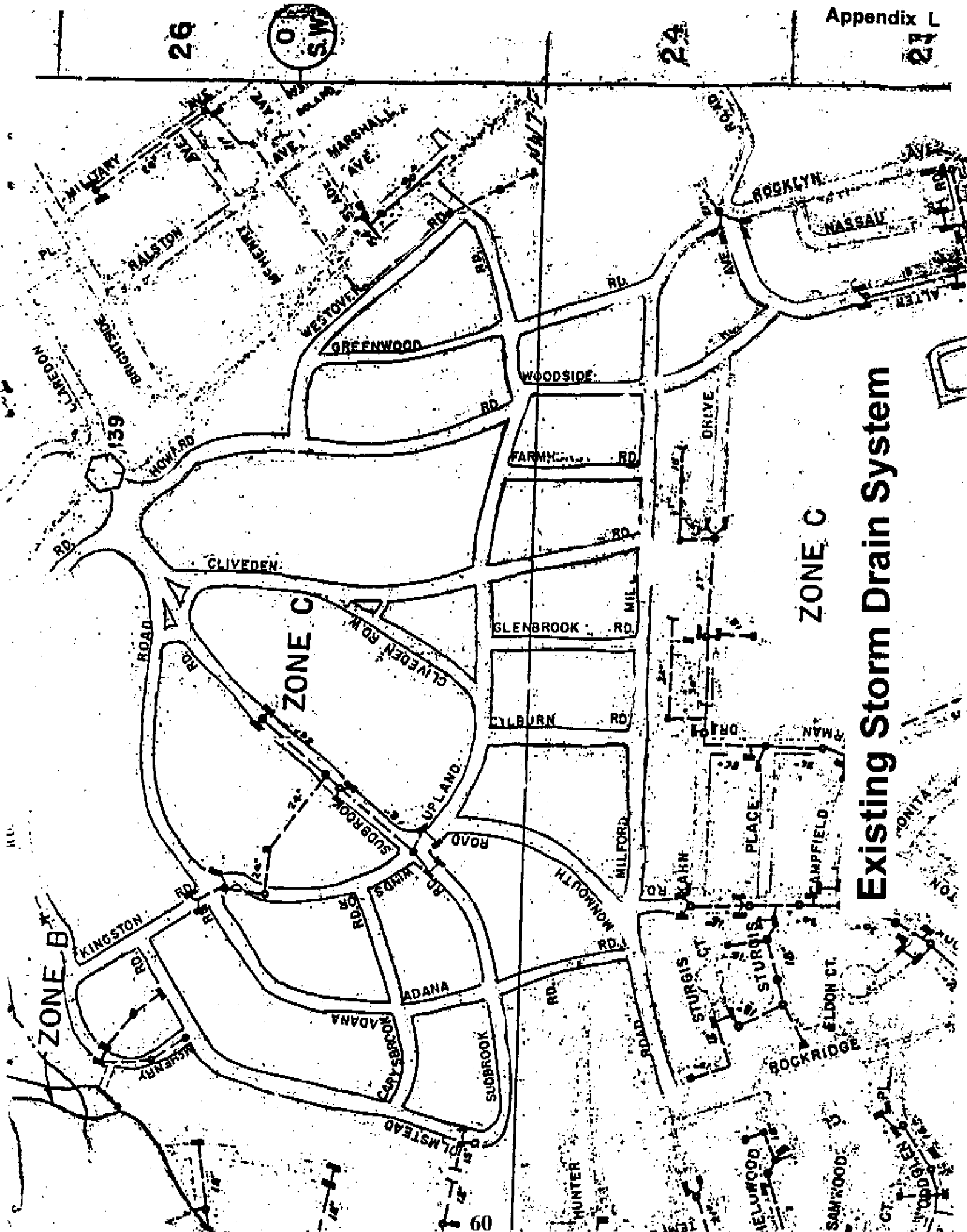
Understanding and implementing Olmsted's theory of landscape architecture in public spaces is essential to preserve the historic qualities of Sudbrook Park. Hopefully, residents will undertake this responsibility with enthusiasm.



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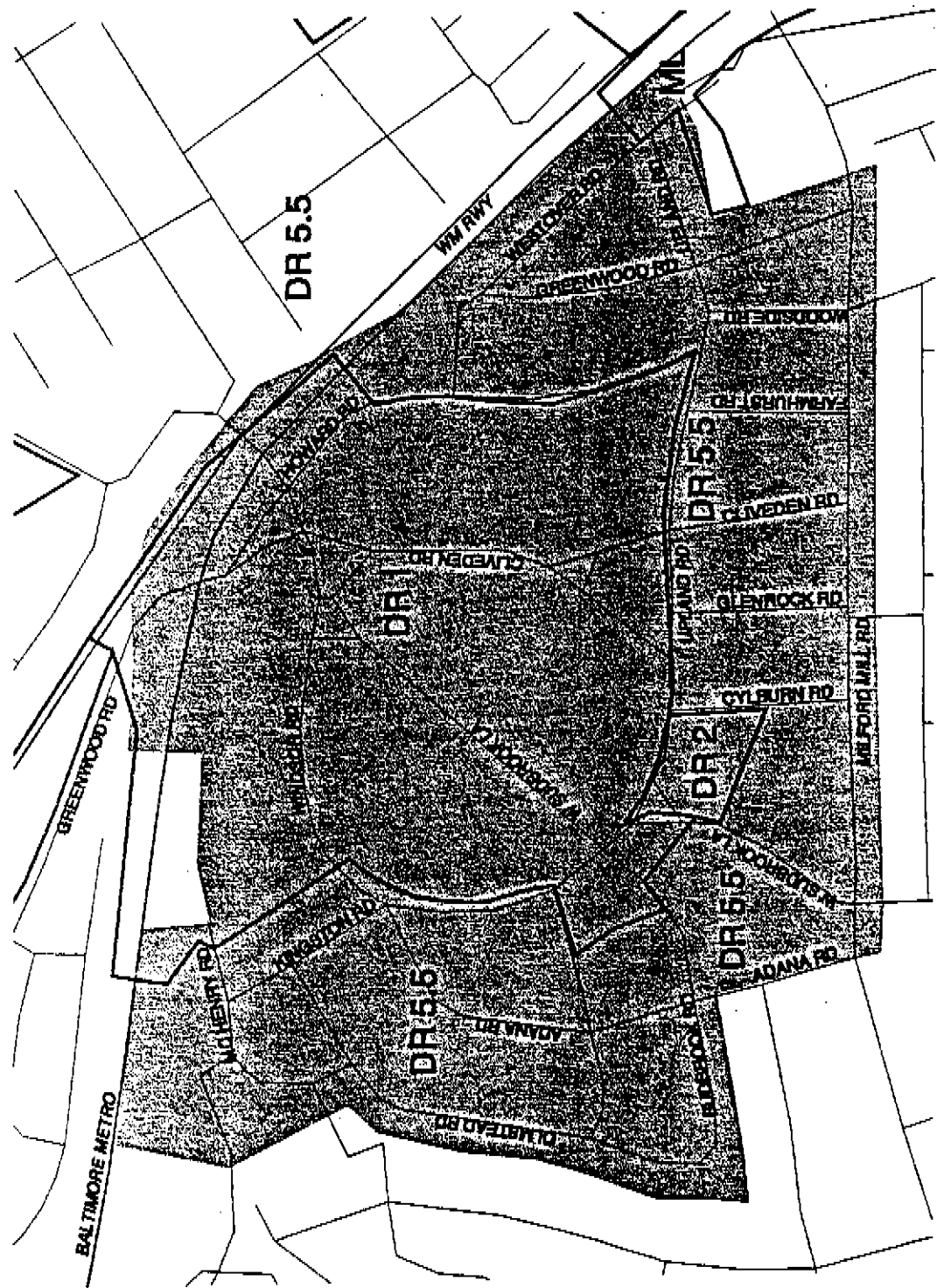


ZONE C

Existing Storm Drain System

09

Sudbrook Community Plan: Zoning



City of Baltimore
Department of Planning
and Economic Development



250 0 250 500 Feet

Types of Zoning in the Sudbrook Area
Density Residential:
DR 1 - 1 Density Units per Acre
DR 2 - 2 Density Units per Acre
DR 5.5 - 5.5 Density Units Per Acre
Manufacturing:
ML - Manufacturing Light

Legend
Railroads
Roads
Sudbrook Area
Zoning

APPENDIX N

612 Cliveden Road
 Baltimore, MD 21208-4713
 December 7, 1997

Individually, to each member of the School Board

This letter is on behalf of the Education Committee of Sudbrook Park, Inc. We have been working in the interest of all residents of Sudbrook Park for the past 18 months to support and strengthen our district's public schools. These include Bedford Elementary, Pikesville Middle and Milford Mill Academy. Our activities have involved both immediate action to market Bedford Elementary to parents of preschool children and long-range education planning as part of Sudbrook Park's Comprehensive Plan. A copy of the Public Schools and Education section of our draft neighborhood plan, submitted to the Baltimore County Planning Commission on November 17th, is attached.

Our Committee activities continue a long tradition of involvement at the PTA and district level. We are parents of current and past Bedford Elementary students and we witness a sharp decline in the number of Sudbrook Park parents who are sending their children to the districted elementary and high school. In fact, a disturbing number of residents place their homes on the market as their children approach both elementary and high school age. It is perceived that realtors are promoting Sudbrook Park as a "first house" neighborhood — or are not promoting it at all — due to the school situation. This elevates concerns about the stability of our neighborhood.

While we have, and will continue to do everything we can to erase perceptions of poor school quality that are sometimes based more on rumor than on fact, it is difficult to argue with parents concerned about low MSPAP scores. There are also concerns about the severe racial imbalances that exist at Bedford Elementary and Milford Mill Academy. Steps have been taken to enhance the academics at these schools, and performance has improved. Correction of racial imbalances will require redistricting. In recent discussion with County school administrators we have learned that, due to growth patterns in the Owings Mills area, some Northwest area schools will undergo redistricting. We ask that, as part of any such plan, Sudbrook Park's schools be given high priority. If Milford Mill Academy's academics and demographics cannot be changed dramatically, then we request that *Sudbrook Park be included within the Pikesville High School District*. If redistricting to achieve better racial balance is not feasible for Bedford Elementary, then *funding for increased staffing and/or a special enrichment program* (e.g., a magnet or an optional academic specialty program) should be provided at this school.

We would be happy to meet with you to discuss these concerns in more detail. Thank you for considering our request.

Sincerely,

Irma Frank

Education Committee Members

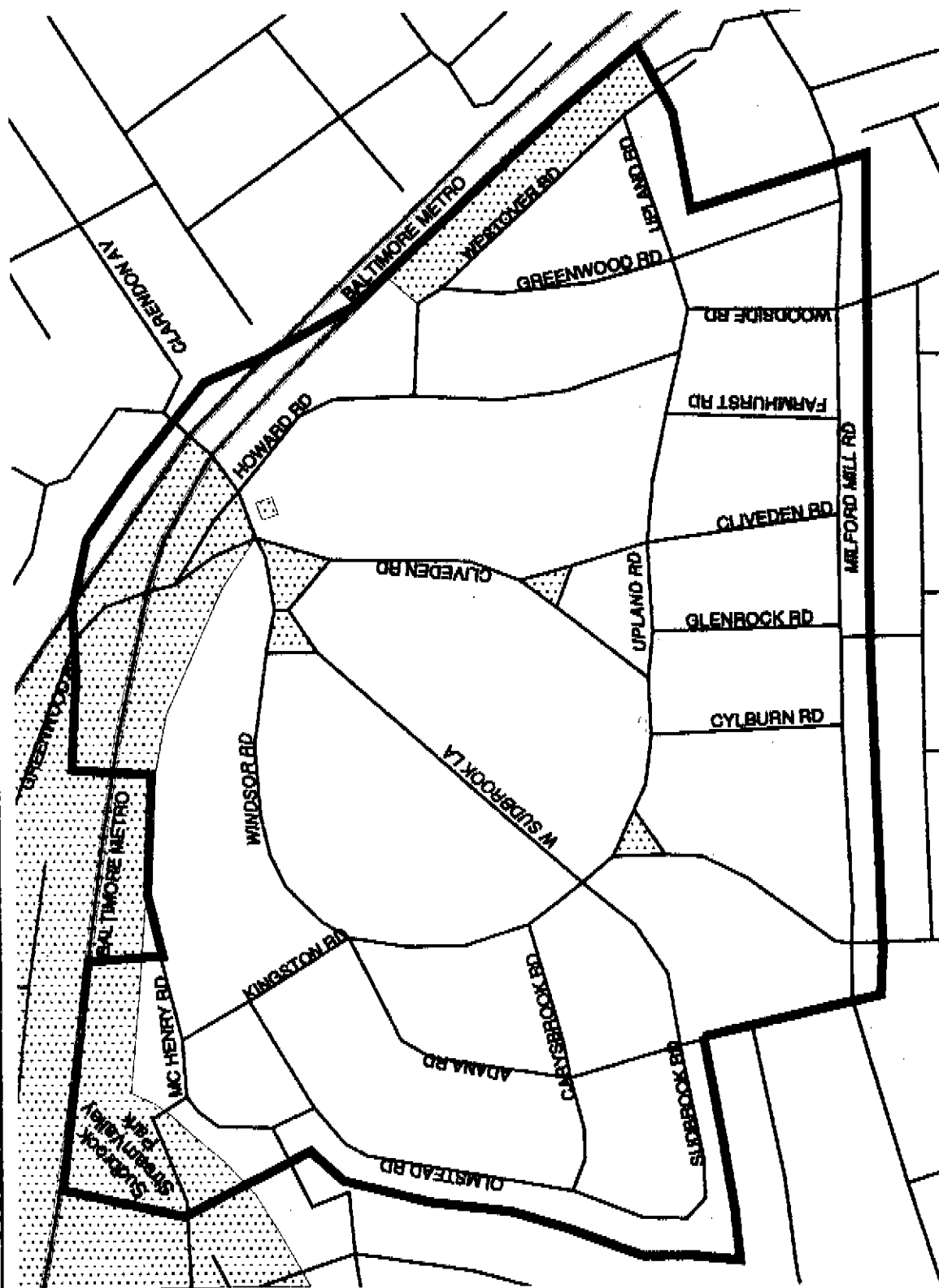
Mira Appleby
 Steven Blizzard

Karen Brown
 Irma Frank, Chairperson

Richard Krohn
 John Leith-Tetrault

Pat Leith-Tetrault
 Myra Lewis

Sudbrook Community Plan: Public Open Space



- Railroad
- Roads
- Public Open Space
- Sudbrook Area



Baltimore County
Office of Planning
County Courts Building
401 Bosley Avenue
Towson, Maryland 21204

<http://www.co.ba.md.us>